

LIT-022

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
APPLICATION FOR LETTERS PATENT

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TITLE: PICTURE FRAME

BACKGROUND OF THE INVENTION

1. Field of the Invention

[001] The invention relates to a picture frame. More particularly, the invention relates to a picture frame with designs printed upon opposite sides thereof to create the impression of depth.

2. Background of the Invention

[002] Picture frames are well known in the prior art and have been developed over the years so as to provide various visual effects. As such, people are continually striving to provide new and improved visual effects.

[003] The new and improved visual effects must be capable of cost effective reproduction and enhance the overall appearance of the picture frame. The present invention provides an improvement over prior art picture frames as it provides a convenient, cost effective and versatile system for producing a three-dimensional effect upon a picture frame.

SUMMARY OF THE INVENTION

[004] It is, therefore, an object of the present invention to provide a picture frame including a substantially transparent support member adapted for supporting a picture such that one may view the picture through the support member. The support member includes a first side and a second side wherein the second side is opposite the first side. The picture frame further includes a first image formed along the first side of the support member and a second image formed along the second side of the support member. The second image is formed about an entire periphery of the second side of the support member so as to define a border shaped and dimensioned for positioning a picture therein for viewing from the opposite side of the support member. The picture frame further includes a picture support adjacent the second side of the support member in a manner permitting viewing of the picture through the support member.

[005] It is also an object of the present invention to provide a method for manufacturing a picture frame. The method is achieved by creating a substantially transparent support member having a first side with a first surface and a second side with a second surface opposite the first side. The support member is adapted for supporting a picture frame and includes a support for

supporting the picture adjacent the second side of the support member in a manner permitting viewing of the picture through the support member. A first image is then formed along the first surface and a second image is formed along the second surface. The second image is formed about an entire periphery of the second side of the support member so as to define a border shaped and dimensioned for positioning a picture therein for viewing from the opposite side of the support member.

[006] It is another object of the present invention to provide a picture frame including a substantially transparent support member adapted for supporting a picture such that one may view the picture through the support member. The support member includes a first side and a second side wherein the second side is opposite the first side. The support member further includes a central portion functioning as a frame portion of the picture frame and an upper portion, folded over in an opposing relationship to the central portion, functioning as a clip member for the picture frame, wherein a picture is selectively positioned between the upper portion and the central portion. The upper portion further includes opposed inwardly directed arcs providing access for an individual's fingers to adjust the picture so it is properly positioned within the frame.

[007] Other objects and advantages of the present invention will become apparent from the following detailed description when viewed in conjunction with the accompanying drawings, which set forth certain embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

- [008] Figure 1 is a front perspective view of a frame in accordance with the present invention.
- [009] Figure 2 is a rear perspective view of the frame shown in Figure 1.
- [0010] Figure 3 is a cross sectional view along the line 3-3 in Figure 1.
- [0011] Figure 4 is a cross sectional view along the line 4-4 in Figure 1.
- [0012] Figure 5 is a detailed view of the section marked in Figure 4.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0013] The detailed embodiments of the present invention are disclosed herein.

It should be understood, however, that the disclosed embodiments are merely exemplary of the invention, which may be embodied in various forms.

Therefore, the details disclosed herein are not to be interpreted as limiting, but merely as the basis for the claims and as a basis for teaching one skilled in the art how to make and/or use the invention.

[0014] With reference to Figures 1 to 5, a picture frame 10 is disclosed. The picture frame 10 includes a substantially transparent support member 12 adapted for supporting a picture 14 such that one may view the picture 14 through the support member 12. The support member 12 includes a first side 16 having a first surface 18 and a second side 20 having a second surface 22 (see Figures 3, 4 and 5). In addition, and with reference to Figures 1, 2 and 3, the support member 12 is composed of a bottom portion 26 functioning as a base member for the final picture frame 10, an upper portion 28 functioning as a clip member for the final picture frame 10 and a central portion 24 functioning as the frame portion of the picture frame 10.

[0015] Referring to Figures 3, 4 and 5, the second side 20 is opposite the first side 16. The relationship between the first side 16 and the second side 20, as

well as first and second images 30, 32 respectively applied to the first and second sides 16, 20, create an impression of depth. The relationship is described below in greater detail.

[0016] The first image 30 is formed along the surface of the first side 16 of the central portion 24 of the support member 12. Thereafter, the second image 32 is formed along the surface of the second side 20 of the support member 12. With regard to the central portion 24 of the support member 12, the second image 32 is formed about the entire periphery of the second side 20 of the central portion 24 so as to define a border shaped and dimensioned for positioning a picture 14 therein for viewing from the first side 16 of the support member 12.

[0017] Although a preferred embodiment is described herein with a border type image along the second side of the central portion 24 of the support member 12, those skilled in the art will appreciate that a border design may similarly be applied to the first side 16 of the central portion 24 of the support member 12 without departing from the spirit of the present invention. Such a design would similarly create an impression of depth with the border sitting in front of the image applied to the second side 20 of the central portion 24 of the support member 12. Similarly, interlaced border type images could be applied to both

the first side 16 and the second side 20 of the central portion 24 of the support member 12.

[0018] Referring to Figures 3, 4 and 5, and with regard to the first and second images 30, 32 respectively formed along the first and second sides 16, 20 of the central portion 24 of the support member 12, the support member 12 is constructed from a single sheet of a transparent polymer. For example, the support member 12 may be constructed from a variety of plastics. It is contemplated in accordance with a preferred embodiment of the present invention that an impact modified acrylic sheet material will be used. Impact modified acrylic materials comprise blends of methyl methacrylate/butyl acrylate/styrene. The impact modified acrylic sheet material provides an ideal blend of strength and clarity for the support member 12. The strength allows one to tightly bend the support member 12 at the top and bottom thereof without the material crazing (micocracks which are caused by stress). Impact modified acrylic sheet material offers better strength than traditional acrylic or polystyrene materials. In addition, it offers better clarity and UV resistance than PETG (polyethylene terephthalate glycol).

[0019] In addition, continuously manufactured impact modified acrylic sheet material is composed of a versatile, thermoplastic material developed for retail

displays in glazing markets as well as other markets requiring strength, appearance and weatherability. The excellent optical characteristics offered by impact modified acrylic sheet material provide for a beautiful look with great impact strength for durability during manufacture, shipping, and in-store use. Further, impact modified acrylic sheet material is rigid, tough and lightweight. It is easily fabricated, including, cutting, routing, forming and cementing. Impact modified acrylic sheet material offers many times the impact strength of glass and standard acrylic sheets, and offers greater surface hardness than polyesters.

[0020] In addition to impact modified acrylic sheet material, other plastics, such as, PETG and polystyrene, may be utilized in the manufacture of transparent frames in accordance with the present invention.

[0021] Although the picture frame 10 in accordance with a preferred embodiment of the present invention is described above as a one-piece construction, those skilled in the art will certainly appreciate the upper portion 28, central portion 24 and bottom portion 26 of the picture frame 10 may be constructed separately and subsequently assembled to form a picture frame within the spirit of the present invention.

[0022] In accordance with a preferred embodiment of the present invention

images are applied to the first side 16 and second side 20 of the support member 12 through the utilization of screen printing. In particular, the support member 12 is constructed from a polymer sheet fabricated from material such as an acrylic sheet including an impact modifier for improving impact strength, polystyrene, PETG, etc., having a thickness between 1 mm and 3 mm. Paint is forced through the surface of a screen which is laid on top of the support member 12. The screen surface is treated so it is porous in areas where paint is desired to bleed through to the support member while providing a barrier in the areas where paint is not desired. This process is repeated on both the first side 16 and the second side 20 of the support member 12.

[0023] The paint which bleeds through the screen onto the surface of the support member 12 creates the pattern of the first and second images 30, 32. The double sided printing process, coupled with the different paint color combinations, creates the illusion of a three-dimensional frame, matte, glazing system.

[0024] More particularly, and in accordance with a preferred embodiment of the present invention, the second side 20 of the support member 12 is printed along its entire surface, with the exception of the picture opening 34 in the central portion 24 of the support member (see Figures 1, 3, 4 and 5). In this

way, the picture frame 10 is provided with a generally consistent color scheme while also creating a surface with which the first image 30 may contrast. As seen in Figures 3, 4 and 5, the first image 30 is formed along the surface of the first side 16 of the central portion 24 of the support member 12. The first image 30 lies over the second image 32, and the different depths of the first and second images 30, 32 create a three-dimensional effect.

[0025] As mentioned above, the relationship between the first and second images 30, 32 may be varied to create different three-dimensional effects. It is further contemplated that additional colors may be employed in the printing process (for example, 2 or more colors may be employed) and that the additional colors will enhance the overall aesthetic effect provided in accordance with the present invention.

[0026] More particularly, and in accordance with the screen printing techniques described above, a wooden or aluminum frame with a fine nylon mesh stretched thereover is utilized. The mesh is coated with light sensitive emulsion or file, which, when dried, will block the holes in the mesh. The image that needs to be printed is output to the film either by camera or an image setter. The file positive and the mesh on the screen are sandwiched together and exposed to ultraviolet light in a device called a print down frame. The screen is

then washed with a jet of water which washes away all the light sensitive emulsion that has not been hardened by the ultraviolet light. This leaves an open stencil which corresponds exactly to the image supplied on the film. The screen is then fitted on the press and is hinged so it can be raised and lowered. The support member 12 to be printed is placed in position under the screen and ink is placed on a top side of the screen. A rubber blade gripped on a wooden metal handle called a squeegee is pulled across the top of the screen so as to push ink through the mesh onto the surface of the support member 12 being printed. To repeat the process, the squeegee floods the screen again with a return stroke before the next impression.

[0027] Once designs have been printed on the first and second sides 16, 20 of the support member 12, the substrate is cut into a specific pattern dictating the size and functionality of the final picture frame 10. In particular, arcs 36 are cut into the support member 12 along the upper portion 28 of the support member 12 (see Figure 2). The arcs 36 are generally concave recesses cut into the opposed edges of the upper portion 28 of the support member 12. The arcs 36 extend inwardly enough to permit a user to manipulate the picture for properly positioning the picture with the frame. As those skilled in the art will certainly appreciate the arcs may take a variety of shapes without departing from the

spirit of the present invention. As will be discussed below in greater detail, this upper portion 28 of the support member 12 ultimately becomes the back of the frame 10, serving as a clip member supporting pictures adjacent the second side 20 of the central portion 24 of the support member 12 wherein the arcs 36 provide access for an individual's fingers to adjust the picture 14 so it is properly cropped.

[0028] With references to Figures 1, 2 and 3, the bottom portion 26 of the support member 12 extends from the central portion 24 of the support member 12 such that it may be folded to form a base member capable of supporting the frame 10 in a variety of positions. In this way, the base member provides for positioning of the frame 10 in either portrait or landscape orientations.

[0029] Once the support member 12 is cut into its final configuration, it is heated to its forming temperature near zones along the interface between the bottom portion 26 and the central portion 24 and along the interface between the central portion 24 and the upper portion 28. The support member 12 is then bent at a 180° angle at the interface between the central portion 24 and the upper portion 28. In this way, the upper portion 28 of the support member 12 is in a facing relationship with the central portion 24 of the support member

12 creating a space within which a picture 14 is supported for viewing. The upper portion 28 thereby becomes a clip member supporting the picture 14 up against the second side 20 of the central portion 24 of the support member 12.

[0030] The support member 12 is also bent at the interface between the central portion 24 and the bottom portion 26 of the support member 12. This bend is formed at an angle of approximately 80°. By bending the bottom portion 26 in this manner, a base member is created which permits an individual to position the frame 10 in either a portrait orientation or a landscape orientation.

[0031] Once the support member 12 is bent to a desired configuration, it is permitted to cool. As the polymer cools it retains its molded shape and is ready for use as a frame 10.

[0032] Further to the design creation process described above, images may be applied to the support member via hot foil printing/hot stamp. Hot stamping machines have electrically heated type (blocks of metal with raised letters) holders, type-high foundry type and/or commercially prepared dies. The operator loads the type holder with the appropriate reverse type, logo, illustration or die, and positions it in the machine with set screws. When the type reaches the desired temperature, a lever is pulled to cause the hot type to be pressed against a strip from a roll of plastic (mounted on the machine) and a

reverse image is “melted” onto the paper or other receiving item held in position by the machine’s jaws.

[0033] The basic principal is like an iron-on transfer. One can identify hot stamp materials by the especially vivid colors and slight indentation where the design is applied (as opposed to top printing where the surface is smooth or embossing where the surface is raised). The rolls of plastic come in a wide variety of colors, including a wide variety of metallic colors. The more expensive hot stamping machines are automatic and can turn out thousands of printed items per hour.

[0034] Further, and in accordance with an alternate embodiment of the invention, lamination may be utilized in applying the images to the first and second sides of the support member. Lamination is a thermal process in which film is applied to one side of a material. Heat activated film composed of a plastic layer and an adhesive layer bonds to one surface of the support member. In extrusion coating a lamination resin is melted and formed into a thin hot film. The thin hot film is coated onto a moving, flat substrate, such as, paper, paperboard, metal foil or plastic film. The coated substrate then passes between a set of counter rotating rolls, which press the coating onto the substrate to ensure complete contact and adhesion.

[0035] Extrusion laminating, also called sandwich laminating is a process related to extrusion coating. However, in this case, the extrusion coated layer is used as an adhesive layer between two or more substrates. A second layer is applied to the extrusion coating while it is still hot and then the sandwich is pressed together by pressure rolls. The extrusion coated layer may also serve as a moisture barrier.

[0036] While preferred embodiments described above are specifically designed for use on tabletops and other horizontal supporting surfaces, the principles of the present invention may be applied in the manufacture of wall hung frames and refrigerator magnet version without departing from the spirit of the present invention.

[0037] While the preferred embodiments have been shown and described, it will be understood that there is no intent to limit the invention by such disclosure, but rather, is intended to cover all modifications and alternate constructions falling within the spirit and scope of the invention.